Pay-performance sensitivity before and after SOX

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Abstract: The purpose of this paper is to investigate the impact on pay-performance sensitivity of the Sarbanes–Oxley Act (SOX), an effect that has been examined in prior research but with often conflicting findings. Using a more comprehensive sample of executives and of compensation components than in prior research, we compare managers' pay-performance sensitivity before and after 2001-2002, a period during which regulatory changes were initiated to increase scrutiny over managerial manipulation and improve financial reporting quality. Based on ExecuComp data from 1992 to 2005 (and excluding the years 2001 and 2002), our results show that pay-performance sensitivity using either market-based or accounting-based measures of performance increased significantly following these events. When we further decompose executive pay into its cash-based and equity-based components, we find evidence of an increase in the link between performance and executive compensation for five of six measures for each performance metric. Thus, in contrast to most prior studies on the impact of SOX on executive incentives and compensation, our evidence is consistent with an improvement rather than weakening in the alignment of managerial and shareholder interests.

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Abstract

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Keywords: Pay-performance sensitivity; executive compensation; Sarbanes-Oxley.

JEL Classification: M41, G30, J33

1. Introduction

Researchers have long identified poor executive compensation practices among the possible sources of the troubles plaguing corporate America. Gordon (2002) and Coffee (2004) both include compensation-related problems near the top of their lists when analyzing the demise of Enron and its possible causes and repercussions. Although the words used vary, the typical complaint about executive pay has been relatively consistent: the pay executives receive is not adequately aligned with results they produce.[1]

The purpose of this paper is to investigate the impact, if any, on pay-performance sensitivity of the changes brought forth by the passage of the Sarbanes-Oxley Act of 2002 (SOX). We chose to examine pay-performance sensitivity at this time because we are interested in the effects of regulatory monitoring on the relation between executive compensation and firm performance, and the passage of SOX provides an ideal setting to study these relationships. The relation between executive pay and firm performance is generally captured in the literature by the measurement of pay-performance sensitivity, which has been most often defined as the dollar change in executive wealth associated with a dollar change in shareholder value (Jensen and Murphy, 1990).

For several years prior to the passage of SOX, executive pay soared, with the economic rationale being that companies were competing for the best talent. As the scandals shortly after the turn of the century impaired public confidence, the support for

[1] Business practitioner and popular press also complained that "pay-performance sensitivity" was too low. For example, "Have they no shame? Their performance stank last year, yet most CEOs got paid more than ever" (*Fortune*, April 28, 2003). Also see "End the Madness of Excessive CEO Pay" (*The Huffington Post*, February 6, 2009). However, it should be recognized that higher pay-performance sensitivity is not universally regarded as a plus. Critics argue that performance can be manipulated by executives to such a degree that high levels of pay-performance sensitivity do not always reflect "true" effort (as opposed to manipulative or non-productive effort).

this justification dwindled. The changes brought forth by SOX affect both financial reporting and the greater business community. We examine whether these changesaltered executives' pay-performance sensitivity. In our empirical analyses, we control for other contemporaneous changes, such as alterations in financial reporting standards (for example, FASB recommended the voluntary expensing of stock options in the early 2000s, followed soon after by mandatory expensing), and the bursting of the "tech" bubble. We do not attempt to evaluate the total welfare effect brought upon by SOX. Rather, we focus on changes in the link between pay and performance, and in so doing, we draw inferences regarding one important aspect of societal welfare.

We hypothesize that executive pay-performance sensitivity should increase after the passage of SOX if the legislation succeeded in accomplishing certain of its objectives. First, tenets of SOX were aimed at strengthening corporate governance in the U.S. If the passage of SOX succeeded in reducing managers' potential for self-serving manipulations, then managers might be expected to concentrate more extensively on productive effort, *provided* they were rewarded for doing so. If shareholders anticipate this, we would expect to see pay-performance sensitivity to increase in the wake of SOX as a mechanism to encourage managers to exert effort on behalf of their shareholders. Second, SOX strove to improve the quality of financial reporting, an aim that has been substantiated in some prior studies (Koh et al. 2006; Lobo and Zhou 2006; Bartov and Cohen 2007; among others). As accounting information becomes more reliable (or is believed to be so), shareholders are more likely to use it as the performance measure in executive compensation contracts (Carter et al., 2009; Kalelkar and Nwaeze, 2011), leading to an improved link between executive pay and performance.

Several prior studies also examine the change in executive pay after SOX. Carter et al. (2009) focus on the association between executives' bonus compensation and earnings management in the context of SOX. They find that the positive association that already existed between bonus payments and earnings before SOX increased subsequent to its passage. Firms that exhibit the largest decrease in income-increasing accruals after SOX show the largest increase in the weight placed on earnings changes in bonus contracts. Cohen et al. (2011) argue that the passage of SOX imposed additional risk on CEOs by making them personally responsible for reported financial information. As a result, the CEOs' optimal pay structure changed to reflect the extra risk. Specifically, Cohen et al. (2011) find an increase in the fixed portion of pay and a decrease in the variable portion. They also present evidence of reduced investments in research and development and in capital expenditures after SOX, a possible consequence of CEOs becoming more risk-averse. Chang et al. (2011) examine SOX-related changes in executives' stock ownership as well as pay-performance sensitivity. While they find no change in stock ownership and in pay-performance sensitivity for CEOs in regulated industries, they find significant decreases in both metrics for CEOs in unregulated industries in their sample. In general, their findings indicate a weakened incentive alignment between CEOs and shareholders.

We draw upon these studies, but extend our analyses to include all components of compensation, both cash and non-cash, and to include not only CEOs but all top executives. We further explore the differential reaction to SOX among two subsamples of executives: CEOs and CFOs, and other executives. Thus, our study is more comprehensive than prior studies in its direct investigation of the alteration in pay-

performance sensitivity and its components before and after this period of turmoil and consequent change. It also serves to reconcile the seemingly conflicting findings of prior studies by examining both market-based and accounting-based performance measures. In addition, we adopt a comprehensive sample of executives; we apply controls for other potentially confounding variables that could affect pay-performance sensitivity; and we decompose the sensitivity of performance into all compensation components.

We choose to examine both accounting earnings and stock market values as measures of performance in our analyses, since different types of compensation (cash versus equity, for instance) may be linked to differing measures of performance. For example, the majority of bonuses in executive compensation contracts have been shown to be based on accounting performance (Carter et al., 2009). We first decompose compensation into cash and equity-based compensation, and then further decompose cash-based compensation into salary and bonuses, and equity-based compensation into restricted stocks and options. Based on ExecuComp data from 1992 to 2005, our results reveal that both accounting-based sensitivity and market-based sensitivity generally increased following SOX, with five of six measures revealing a significant increase in each case. The evidence presented here is consistent with an improvement in the perceived credibility of reported earnings and an increased reliance on earnings in compensation contracts, which in turn resulted in an increase in the link between executive compensation and shareholder wealth.

We further consider possible cross-sectional variation in the change, if any, in pay-performance sensitivity. First, we consider potential differences between top executives and other managers. As argued by Cohen et al. (2011), the passage of SOX

imposed additional risk on CEOs in particular by holding them personally accountable for reported financial information, with a resultant shift in the optimal pay structure for CEOs. We explore the differential reaction to SOX across two subsamples of executives: CEOs and CFOs, and other executives. We group CEOs and CFOs together because the risk exposure effect (as hypothesized by Cohen et al. (2011)) applies to both CEOs and CFOs. For example, Section 302 of SOX requires CEOs and CFOs to personally sign their companies' financial statements, exposing them to potentially higher personal liability and risk than other top executives. However, with the exception of the signing requirement, most of the changes aimed at improving the quality of financial information (internal control changes, introduction of the PCAOB, added disclosures, etc.) could be expected to affect various levels of executive behavior, not merely CEOs and CFOs. Thus, we wish to consider whether pay-performance sensitivity after SOX changed differentially for CEOs and CFOs versus other executives. If, for instance, CEOs and CFOs were motivated to exert greater effort due to closer monitoring, but to behave more conservatively due to higher risk exposure (and to demand altered compensation contracts accordingly), we might observe a mitigating or offsetting effect, with less of an increase in pay-performance sensitivity (or even a decrease). Our results are consistent with this conjecture; i.e., the observed increase is stronger and more consistent across specifications in the subsample of other executives than in the sample of CEOs and CFOs.

Next, consistent with Chang et al. (2012), we consider potential differences between regulated and unregulated firms with respect to pay-performance sensitivity. Chang et al. (2012) find that while pay-performance sensitivity *decreased* for executives in unregulated industries following SOX, it *increased* for executives in regulated

industries. To consider whether our findings were driven by firms in regulated industries, we repeat our analyses on a sample excluding regulated industries, and the results remain unchanged. The evidence presented here suggests that the changes improved the perceived credibility of reported earnings in general, not just for firms in regulated industries, and that the increased reliance on earnings in compensation contracts after SOX led to an increase in the link between executive compensation and shareholder wealth. This evidence complements that presented in the context of earnings management and voluntary disclosure, which also support positive effects of SOX on earnings quality (Cahan and Zhang, 2006; Lobo and Zhou, 2006; Cohen et al., 2008; Koh et al., 2006, among others).

Our findings have implications consistent with the effectiveness of SOX in reducing agency cost and improving overall corporate governance in the U.S. By improving financial reporting quality and providing more managerial discipline, SOX led to generally higher pay-performance sensitivity, thus realigning manager-shareholder interests and providing more incentives for managers to exert productive effort. While our study does not attempt to evaluate the overall welfare effects of SOX, our findings suggest that one important aspect, i.e., the alignment of managerial incentives and effort, shows evidence of improvement.

The remainder of this paper is structured as follows. Section 2 provides the background and motivation for our analysis. Section 3 presents our methodology and describes sample and data. Section 4 presents our empirical analysis, and Section 5 concludes the study.

2. Background and Hypothesis Development

To protect shareholders and restore public confidence in corporate America after Enron and several other scandals around 2001, U.S. regulators passed a piece of legislation, i.e., SOX, aimed at raising the potential penalty levels for both managers and auditors found to be at fault. A more extensive set of legal requirements was thus imposed on the corporate governance and financial reporting of public companies.

For example, the passage of SOX led to the creation of the Public Company Accounting Oversight Board (PCAOB), which serves as the auditor of the auditors. This legislation requires public accounting firms that audit publicly traded companies to be registered with the PCAOB, and to subject themselves to inspections on a regular basis. Any firm auditing more than 100 publicly traded client firms must be inspected annually, while firms not meeting the 100-audits threshold are subject to inspection every three years. PCAOB, as a non-profit organization reporting to the SEC, claims to represent and protect the interests of the shareholders. By committing to inspect the auditors, the Board creates an extra tool for shareholders to reduce agency problems.

Furthermore, SOX required CEOs and CFOs to sign their companies' financial statements, attesting to their accuracy. The Act also created potential criminal liability for the destruction of records, even when conforming to an otherwise applicable records management policy and even if no federal investigation was in process at the time the records were destroyed. An individual can be charged with obstruction of justice (carrying 20 years imprisonment) for destroying evidence if he/she should have known to

preserve the document for any possible future government inquiries.[2] The above measures implemented by SOX significantly increased the discipline over managers' behavior by imposing harsher potential consequences for managerial misconduct. As a result, executives are less likely to engage in manipulation and opportunism, and more likely to focus on productive efforts after SOX.

Another primary goal of SOX was to improve the quality of financial reporting. Li et al. (2008) find a positive stock market response to the passage of SOX, which they interpret as evidence of investors' anticipation of constraint of earnings management and enhanced financial statement quality resulting from SOX. Similarly, Jain and Rezaee (2006) find that the market reacted positively (negatively) to events indicative of increased (decreased) likelihood of SOX passage. This early evidence is consistent with a prediction that investors expected improved managerial effort and alignment of shareholder-manager interests. Several researchers (e.g., Koh et al., 2006; Lobo and Zhou, 2006; Gordon et al., 2006; Bartov and Cohen, 2007; Carter et al., 2009) present evidence consistent with an improvement in financial reporting quality in the wake of SOX, implying that accounting numbers became a more reliable base for executive compensation.[3] Kalelkar and Nwaeze (2011) find that the weights the investors put on earnings and earnings components for valuation purpose increased significantly after the passage of SOX, indicating the market perception of the reliability of earnings and earnings components improved. Carter et al. (2009) further show that the bonus portion

[2] SOX also induced extra scrutiny from inside the companies. For example, Burks (2010) shows that the discipline by boards on CEOs and CFOs for accounting restatements became more severe after SOX. Specifically, the boards take harsher actions against top executives in the form of reductions in bonus payouts.

[3] On the other hand, Ghosh et al. (2010) find no evidence that overall earnings management decreased post-SOX.

of executive compensation increased, linking this increase to improved accounting measures.

Taken together, we argue that the requirements imposed by SOX were likely to have curbed managers' manipulation of financial data while encouraging their productive efforts. These two effects could both potentially increase the link between the managers' pay and performance. Thus, we predict an increase in the overall pay-performance sensitivity after SOX. On the other hand, some evidence has emerged that managers switched in the wake of SOX from earnings management via accruals and other accounting measures to increased "real" management, rather than to increased effort on the behalf of their shareholders (Cohen et al., 2008). Thus, we acknowledge the possibility of mitigating factors, which could work against our hypothesis. Ultimately, the net effect is an empirical question.

3. Research Design

3.1 Model

Our sample period extends from 1993 through 2005, and we test whether SOX and related events have caused a significant change in the pay-performance sensitivity, tested using both market-based and accounting-based performance measures. The scandals that began in 2001 (Enron, among others) had resulted in increased scrutiny by the following year. These events led to the passage of SOX; and although many of its tenets were not in place at once, the climate of change (both present and forthcoming) was already clear.

To examine the impact of SOX and related events on the sensitivity between executive compensation and market-based performance, we estimate the following regression model:

$$\begin{aligned}\Delta lnTOTAL\_PAY_{j,t} = {} & \alpha_0 + \alpha_1 \Delta lnSHRHLDR\_VALUE_{j,t} + \alpha_2 POST + \alpha_3 lnASSETS_{j,t} \\ & + \alpha_4 \Delta lnIND\_PERFORMANCE_{j,t} + \alpha_5 BM_{j,t} + \alpha_6 OWN_{j,t} + \alpha_7 CLOSEHELD_{j,t} \\ & + \alpha_8 OPTION\%_{j,t} + \alpha_9 TECH_{j,t} + \alpha_{10} REGULATED_{j,t} + \alpha_{11} INVEST_{j,t} \\ & + \alpha_{12} POST * \Delta lnSHRHLDR\_VALUE_{j,t} + \alpha_{13} lnASSETS * \Delta lnSHRHLDR\_VALUE_{j,t} \\ & + \alpha_{14} \Delta lnIND\_PERFORMANCE * \Delta lnSHRHLDR\_VALUE_{j,t} \\ & + \alpha_{15} BM * \Delta lnSHRHLDR\_VALUE_{j,t} + \alpha_{16} OWN * \Delta lnSHRHLDR\_VALUE_{j,t} \\ & + \alpha_{17} CLOSEHELD * \Delta lnSHRHLDR\_VALUE_{j,t} \\ & + \alpha_{18} OPTION\% * \Delta lnSHRHLDR\_VALUE_{j,t} \\ & + \alpha_{19} TECH * \Delta lnSHRHLDR\_VALUE_{j,t} \\ & + \alpha_{20} REGULATED * \Delta lnSHRHLDR\_VALUE_{j,t} \\ & + \alpha_{21} INVEST * \Delta lnSHRHLDR\_VALUE_{j,t} + \varepsilon_{j,t} \end{aligned} \quad (1)$$

Year effects are included in the model but are not reported in the results section. The dependent variable ΔlnTOTAL_PAY is the yearly change in the natural log of total executive compensation; and ΔlnSHRHLDR_VALUE is the yearly change in the natural log of shareholder value.[4]

[4] An alternative specification sometimes used to analyze pay-performance sensitivities is: Δ(Executive Pay) = a + bΔ(Shareholder Value), where b is interpreted as "pay-performance sensitivity." In contrast, the regression coefficient, B, in our specification is sometimes referred to as "pay-performance elasticity": Δln(Executive Pay) = A + BΔln(Shareholder Value). Δln(Shareholder Value) ignores share issues or repurchases and therefore equals a continuous rate of return on common stock, r. We can also express our specification as Δln(Executive Pay) = A + Bln(1+r).

Our variable of interest is the interaction term, POST*ΔlnSHRHLDR_VALUE, where POST is an indicator variable set equal to one for years from 2003 onward, and zero for years up through 2000. We exclude both 2001 and 2002 from the pre- and post-periods in our analysis as there was a great deal of change and tumult during both years, and arbitrarily assigning 2001 and 2002 to either pre- or post-periods could bias our analyses.[5] A positive coefficient estimate for this interaction term supports our hypothesis, indicating an increase in pay-performance sensitivity after the passage of the SOX Act. We subsequently perform tests where executive pay is decomposed to determine which components are associated most closely with changes in firm performance. We report heteroscedasticity consistent standard errors that are clustered at the firm level.

We control for variables that prior research has found to be related to executive pay or to pay-performance sensitivity. The control variables included are firm size (lnASSETS), industry performance (ΔlnIND_PERFORMANCE), book-to-market ratio (BM), executive ownership (OWN), closely-held ownership (CLOSEHELD), stock options as a percentage of total executive compensation (OPTION%), whether the firm is in the technology industry (TECH) or regulated industry (REGULATED), and investments (INVEST). The coefficients on the control variables allow us to consider the effect of each on compensation (or its components), while the interactions between ΔlnSHRHLDR_VALUE and each of the control variables would reveal the association, if any, between pay-performance sensitivity and each variable. Our primary focus in this paper and in the following paragraphs is on the characteristics related to pay-performance sensitivity measures, as shown in prior literature. The purpose of the interactive terms is

[5] We also estimate our regression with the years 2001 and 2002 included in the PRE period, since many of the changes from SOX had not been implemented yet, though the climate was clearly set for change. Those results are summarized in a subsequent footnote.

to control for other factors that might have caused changes in pay-performance sensitivity independent of SOX and its consequences.

The relation between firm size and pay-performance sensitivity is not clear-cut. Both Schaefer (1998) and Jensen and Murphy (1990) suggest that pay-performance sensitivity decreases with firm size, while others (Smith and Watts, 1992; Core and Guay, 1999) argue that the level of equity incentives may increase at a decreasing rate with firm size as executives in larger firms are both more highly compensated and have greater equity-related incentives. We measure firm size as the natural log of total assets at the fiscal year end.

Additionally, we control for industry performance (ΔlnIND_PERFORMANCE) in our regression, where ΔlnIND_PERFORMANCE equals the average yearly change in the natural log of shareholder value of all *Compustat* companies in the same two-digit SIC code. Filbeck et al. (2012) show that SOX may impact different industries in different ways. Also, Gibbons and Murphy (1990) find that changes in CEO pay are positively related to firm performance, but negatively related to industry performance. Their findings support the theory of relative performance evaluation in that CEOs are rewarded not only on the basis of absolute performance, but also on performance "relative to other firms in the industry or market in order to filter common risk from the compensation of risk-averse managers" (Gibbons and Murphy, 1990).[6]

Both Smith and Watts (1992) and Core and Guay (1999) find a positive relation between a firm's growth opportunities and the extent to which the firm uses equity incentives to tie a manager's wealth to firm value. Following their studies, we include the

[6] This variable is more directly related to compensation than to pay-performance sensitivity, and we estimate the regression both with and without its interaction with performance, and our results are robust to the inclusion or exclusion of the interactive term.

book-to-market ratio (BM) as a proxy for expected growth in a firm's operations. BM is measured as book value of common equity divided by market capitalization. Firms with higher growth opportunities will have lower book-to-market ratios. Previous research suggests that executive equity ownership fosters managerial behavior more consistent with stockholders' interests (Palia, 1998; Himmelberg et al., 1999). Therefore, we control for executive ownership (OWN), measured as the percentage of total common shares (excluding stock options) owned by executives.

We also consider other potentially confounding events, such as the mandated disclosure or expensing of stock option grants and the bursting of the tech bubble, either of which could affect pay-performance sensitivity. Craighead et al. (2004) suggest that corporate governance improves more following mandated compensation disclosures in firms with dispersed ownership than in closely-held firms, where the Board represents shareholder interests better in the absence of a mandate. Both the mandated disclosure and, subsequently, the expensing of stock options took place in the U.S. during our sample period. The required expensing of stock options might be expected to affect executive compensation, either in the total amount of compensation or in the structure of compensation packages, as many companies decreased the amount of options granted or replaced stock options with other forms of compensation (i.e., bonuses, restricted stock granted, etc.) in response to the Stock Option Accounting Reform Act passed in 2003. Following Craighead et al. (2004), we include a variable that captures the percentage of total executive pay consisting of stock options (OPTION%) and a variable that identifies whether a firm is closely held (CLOSEHELD) to control for the extent to which a particular company was likely to be affected by the changes in disclosures and expense

reporting. The bursting of the tech bubble between 2000 and 2001 led to the loss by technology companies of almost 5 trillion dollars of market value, drawing widespread attention. We add an indicator variable for all tech firms to consider this possible industry effect (TECH).

Finally, we add an indicator variable to control for the extent to which regulated industries are differentially affected by SOX (REGULATED). Cohen et al. (2011) document a reduction of risky investments and CEOs' pay-performance sensitivity following SOX. We include the variable INVEST to control for the extent to which the relation between executive pay and firm performance is likely to be affected by any shift in investment decisions.

To consider the sensitivity between executive compensation components and accounting earnings, we decompose total executive pay in two different ways. First, we decompose the total pay into cash-based compensation (i.e., sum of salaries and bonuses) and equity-based compensation (i.e., sum of options and restricted stock granted), and then we further decompose cash-based compensation into salaries and bonuses, and equity-based compensation into options and restricted stock granted.[7] We analyze the relation between firm performance and each of the pay components.

Executive compensation plans often include a stated objective of firm value maximization but formally tie compensation to an accounting-based measure of firm value such as earnings. Executive pay packages frequently contain an annual bonus tied to accounting performance (Murphy 1999, p. 3). With heightened scrutiny and a more

[7] We do not present the regression estimation of the salary component as the dependent variable separately since it is not expected to relate as closely to performance measures as the incentive-based components, and we find no significant change in pay-performance sensitivity for salaries, either in the accounting-based or market-based specification.

rigorous auditing environment in 2001, we expect an increase in the reliability of accounting performance measures, as previously discussed. To test this assertion, we repeat equation (1), replacing shareholder values with accounting earnings (ΔlnEARNING) which is the yearly change in the natural log of earnings before nonrecurring items. This specification examines changes in pay to performance sensitivity where performance is an accounting rather than market-based measure. In this accounting-based specification, we include an additional control variable for earnings persistence (PERSIST) and its interaction with our performance measure.

3.2 Data

We obtain executive compensation data from ExecuComp for the years 1992 through 2009.[8] We use the data from 1992 to compute yearly changes for 1993; thus our sample period begins in 1993. We calculate executive pay by summing the following: salaries, bonus, value of restricted stock granted, value of stock options granted, long-term incentive payouts, and other benefits that cannot be easily categorized. The value of stock options is obtained from ExecuComp and estimated using the Black-Scholes model (as reported by ExecuComp). We obtain financial data from *Compustat* Industrial Annual data files to calculate the average annual industry performance (ΔlnIND_PERFORMANCE), book-to-market ratio (BM), and investment (INVEST).

Our initial sample consists of 165,898 executive-year observations. Missing executive total pay data triggers the elimination of 63,419 observations, leaving us with 102,479 observations. Incomplete financial data results in the elimination of another 10,057 observations, leaving 92,422 executive-year observations. Figures 1A through 1D

[8] Firms included in ExecuComp differ from non-ExecuComp firms in size, complexity, liquidity, etc. (Cadman et al., 2010). Therefore, extrapolating our findings to non-ExecuComp firms should be done with caution.

present a pattern of changes over time in both performance measures and in compensation in the period of 1993-2009. However, we focus on 1993 through 2005 in our regressions because of the financial crisis in 2007 to 2009, which could confound our interpretation. Excluding years 2001 and 2002 data reduces the sample to 77,542 executive-year observations.[9] Our sample is further reduced to 6,930 observations when we limit it to firms with non-missing compensation component data to perform our multivariate estimation (to 5,782 observations based on total pay and accounting performance). Table 1 summarizes the sample selection procedures.

Insert Figure 1 and Table 1 about here

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4. Results

4.1 Descriptive data and summary statistics

Panel A of Table 2 provides summary statistics related to the change in executive compensation components and firm performance over time. Mean total compensation increases from $1.80 million in 1993 to $5.45 million in 2000, but decreases to $3.84 million in 2003 and remains below $5 million through 2005. The proportion of compensation from bonuses increases from 1993 to 1995, but shows a decreasing trend from 1996 through 1999; however, it increases substantially from 2003 onward and remains above 20% through 2005. This pattern may be related to an increase in the use of options (in place of bonuses) prior to 2000, and a subsequent decline. The proportion of compensation from salaries decreases from 32.94% in 1993 to 24.55% in 2000, rebounds to 25.59% in 2003, and drops back to 22.60% in 2005.

[9] As mentioned previously, we repeat all analyses with 2001 and 2002 included in the pre- SOX period; our results are qualitatively similar.

Restricted stock granted as a percentage of total compensation hovers between 15% and 18.5% before 2000, but increases from 21.22% in 2003 to 23.53% by 2005. Restricted stock is speculated to have replaced stock options for many firms that were concerned about the effects on the income statement of the change from the intrinsic value method to the fair value method for options as compensation. Consistent with this argument, the only portion of variable pay that decreases significantly after 2002 is the portion from options.

Overall, the t-statistics reveal that the average proportion of compensation from bonuses, restricted stock granted, the average total compensation, the average change in shareholder value and the average change in earnings before nonrecurring items are higher in the post-SOX period than pre-SOX, while the average proportion of compensation from salary and options, as well as the average *change in* total compensation, are lower in the post-SOX period than pre-SOX.

Panel B of Table 2 further summarizes the data by regressing each of the executive compensation components and shareholder wealth on a time trend (TIME) and a dummy variable (POST), similar to the procedure in Cohen et al. (2011). Our linear TIME variable is defined as the calendar year minus 1993 to control for the possibility that pay-performance sensitivity exhibited a time trend during our sample period that is unrelated to the passage of SOX or the accounting scandals that led to its passage. In view of the dramatic changes of the last decade, including September 11 and the bursting of the technology and dot-com bubble, we were concerned that traditional summary statistics could be uninformative due to a lack of stationarity. The results presented in this panel indicate significant *decreases* over time in both bonus and salary compensation, but

increases in options and restricted stock-based compensation. The dummy variable, POST, is significantly positive for salaries, bonuses, and restricted stock-granted compensation, and significantly negative for options, consistent with the trend previously documented by Banerjee et al. (2005), Cohen et al. (2011) and Chang et al. (2012)among others.[10]

Total (or aggregated) compensation increased over time, but decreased significantly in the post-SOX period. In direct contrast, the changes in shareholder value declined over time with a significant increase after 2002.

Insert Table 2 about here

Panels A and B of Table 3 report descriptive statistics for our variables and a correlation matrix, respectively. The natural logarithm of company total assets averages 8.36 (the mean total assets at year-end are $4,273 million). The average annual change in the natural logarithm of shareholder value of all *Compustat* companies in the same two-digit SIC code (ΔlnIND_PERFORMANCE) ranges from -1.13 to 1.00. The highest correlation is between ΔlnTOTAL_PAY and ΔlnOPTION (around 65%) due to variable construction. However, because executive pay variables are dependent variables in separate regressions, the correlation between them does not affect our analysis. There are also noticeable correlations between REGULATED and ΔlnASSETS and between

[10] Cohen et al. (2011) suggest that the decrease in option compensation may, in part, be the result of the firms' response to SOX's requirement for executives to reimburse incentive-based compensation following accounting misstatements.

REGULATED and INVEST, suggesting that firms in regulated industries appear to be larger and invest more than firms in other industries.[11]

Insert Table 3 about here

4.2 Sensitivity of compensation to market-based performance

Column (a) of Panel A in Table 4 reports the multivariate regression results from our estimation of equation (1), using the change in the natural log of *total* executive compensation as the dependent variable. The coefficient on our variable of interest, POST*ΔlnSHRHLDR_VALUE, is positive and significant at the 1% level, consistent with an increase in the sensitivity between total executive pay and shareholder value. The results are consistent in the market-based performance regressions when we break down total executive compensation into cash compensation (i.e., sum of salaries and bonuses) and equity compensation (i.e., sum of stock options and restricted stock granted). As seen in Columns (b) and (c) of Panel A, Table 4, the coefficients on POST*ΔlnSHRHLDR_VALUE are positive and significant at the 1% level, suggesting that the sensitivity between cash compensation and shareholder value, as well as the sensitivity between equity compensation and shareholder value increased following SOX.

When we further decompose executive pay into individual components—bonuses, options, and restricted stock granted—we find a significant increase in the sensitivity between market-based performance and all components of executive compensation, with

[11] Kennedy (2008) suggests that variation inflation factors (VIFs) greater than 10 indicate a potential concern about multicollinearity. None of our VIFs exceed this benchmark. We also conducted our analysis excluding the variable REGULATED. The results were qualitatively unchanged.

the exception of restricted stock granted.[12] These results are presented in Panel B of Table 4, and are based on a specification from equation (1), in which the change in natural log of each executive compensation component replaces the change in total compensation as the dependent variable. Our variable of interest, POST*ΔlnSHRHLDR_VALUE, is positive and significant at the 1% level for two of the three component regressions. This evidence is generally consistent with our hypothesis.

Of the interactive terms, the coefficients on lnASSETS*ΔlnSHRHLDR_VALUE are negative and statistically significant in five out of the six regressions, suggesting that pay-performance sensitivity decreases with firm size, consistent with Jensen and Murphy (1990) and Schaefer (1998). The coefficients on CLOSEHELD*ΔlnSHRHLDR_VALUE are negative and statistically significant in three of the six regressions, suggesting that closely held firms generally have lower pay for market-based performance sensitivity. The coefficients on BM*ΔlnSHRHLDR_VALUE, OPTION%*ΔlnSHRHLDR_VALUE, and TECH*ΔlnSHRHLDR_VALUE are of mixed signs and significant in three regressions at the 10% level or better.

Insert Table 4 about here

4.3 Sensitivity of compensation to accounting-based performance

We next consider whether the sensitivity between executive pay and *accounting*-based performance increased in the post-SOX period (See Table 5). Because executive compensation plans often tie certain components of compensation (bonuses, for instance) to an accounting-based measure such as earnings, we are interested in ascertaining

[12] Restricted stock is the least significant component of compensation, and the lack of significance may simply be due to a lack of power in this test.

whether the link between compensation and accounting numbers, which are arguably less biased for years after 2002, increased following the passage of SOX. If increased reliance is placed by shareholders on accounting performance measures in this period, whether due to heightened scrutiny or to the expected changes resulting from the SOX Act, we would expect that the compensation to accounting performance sensitivity would increase from 2003 onward.

In Column (a) of Panel A in Table 5, the results reveal an increase in pay-performance sensitivity after 2002, as indicated by the positive coefficient on POST*ΔlnEARNING, significant at the 1% level. We also examine the sensitivity between the various executive compensation components and accounting earnings with respect to our variable of interest. In columns (b) and (c) of Panel A, we decompose compensation into cash and equity (non-cash) components; then in Panel B we further decompose compensation into bonuses, options, and restricted stock. The coefficients on POST*ΔlnEARNING are positive and statistically significant at the conventional level (suggesting an increase in the relation between compensation components and accounting-based firm performance) for all components except options (Column b, Panel B). These results are consistent with an argument that accounting earnings were viewed as generally more reliable in the post-SOX period. Stock options decreased as a percentage of total compensation following SOX. The decreasing role of options in total compensation may explain the lack of change in the option-performance sensitivity in the post-SOX period.

Coefficients on control variables in Table 5 are similar in sign to those reported in Table 4, though significance levels fluctuate. One exception is that the coefficient on

OWN*ΔlnEARNING is mostly positive in Table 5 (significant in two cases in Table 5, insignificant for all components in Table 4), suggesting that pay for accounting-based performance sensitivity increases with executive ownership. This result is consistent with the view that executive equity ownership aligns managers' interests with shareholders'. It is also noteworthy that the coefficient on OPTION%*ΔlnEARNING is significantly positive in both Tables 4 and 5 for those components of compensation most clearly linked to security prices (i.e., ΔlnEQUITY COMP and ΔlnOPTION, as well as ΔlnTOTALPAY) but significantly negative for ΔlnCASH COMP, ΔlnBONUS, and ΔlnRST STOCK. The negative coefficients are surprising and may suggest a lack of emphasis on these components by firms that rely most heavily on options for incentivizing managers.

Insert Table 5 about here

We conduct several robustness tests that are not reported in the paper. First, we repeat our analysis, limiting our sample to CEOs to compare our findings to those of Cohen et al. (2011). Consistent with our univariate results, the coefficient on our variable of interest remains significantly positive. In particular, we find the coefficients on POST*ΔlnSHRHLDR_VALUE are positive and significant in the regressions where ΔlnCASH_COMP and ΔlnBONUS are dependent variables, suggesting that CEOs' bonus to shareholder wealth sensitivity increased after 2002. Similarly, we find that the coefficient on POST*ΔlnEARNING is positive and significant in the regressions where ΔlnCASH_COMP and ΔlnBONUS are the dependent variables, suggesting that CEOs' bonus to accounting earnings sensitivity increased after 2002.

Next, to equalize the number of observations before and after SOX, we conduct our regression analysis using only 1993-1995 and 2003-2005 data, and the results are similar to those reported in Tables 4 and 5. Third, we eliminate the top and bottom 1% or 2% of pay and performance observations. Again, our results are not altered qualitatively or in terms of statistical significance.

4.4 Difference between CEO+CFO and other executives

In this section, we explore cross-sectional variation in the effect of SOX on pay-performance sensitivity by dividing our sample into two subsamples: CEOs and CFOs, versus other executives. We wish to consider whether the change in pay-performance sensitivity after SOX for the sample of CEOs and CFOs is different from that for other top executives, as the CEOs and CFOs are exposed to higher personal risk than other executives. The results of these tests are summarized in Table 6 (for market-based performance measures) and Table 7 (for accounting-based performance measures).

The first column of Panel A in Table 6 shows the effect of SOX on the total pay-performance sensitivity of the subsample of CEOs and CFOs. The second and third columns then decompose the total pay into cash and equity component. Panel B reports the effects of SOX on the pay-performance sensitivity of other executives in the same order. We find that while the coefficients on POST*ΔlnSHRHLDR_VALUE are significant and positive for all three columns for the subsample of other executives, only the coefficient on the cash component of compensation is significant for the subsample of CEOs and CFOs.

The tests results for accounting-based performance for the two subsamples are reported in Table 7. Again, we find that the coefficients on POST*ΔlnEARNING are all

significant and positive for the subsample of other executives, but only significant for the cash component for CEOs and CFOs. These results are consistent with an argument that the increase in pay-performance sensitivity is mitigated for CEOs and CFOs, due to their additional risk exposure and personal liability, which may lead to more conservative choices and a higher "fixed" component of executive pay for these executives relative to the earlier period of time. The fact that the increase in pay-performance sensitivity for the cash component remains significant likely relates primarily to the use of bonuses as incentives.

5. Conclusion

We compare managers' pay-performance sensitivity before and after the passage of SOX, a period in which corporate America became enmeshed in accounting scandals and the business climate shifted from one of relative nonchalance about managerial manipulation to one of heightened scrutiny. By 2001, the atmosphere of the financial community was clearly set for change, which was confirmed by the passage of Sarbanes-Oxley Act in 2002.

Prior studies have examined the effect of SOX from various perspectives. Both Li et al. (2008) and Jain and Rezaee (2006) find evidence of a positive stock market response to the passage of SOX or to events indicative of the likelihood of its passage. Li et al. interpret their findings as evidence that investors anticipated more constrained earnings management (and enhanced financial statement quality) in the wake of SOX. More recent studies present evidence consistent with these early predictions; i.e., that, in response to various tenets of SOX, the quality of financial reporting has improved and the discipline of managers tightened (Koh et al., 2006; Lobo and Zhou, 2006; Cahan and

Zhang, 2006, among others). However, the prior studies on the impact of SOX on executive compensation and pay-performance sensitivity have provided mixed results.

While we expect improved financial quality and tighter managerial discipline to lead to enhanced pay-performance sensitivity, we allow for the possibility that increased risk to CEOs and CFOs could have a mitigating (or opposite) effect. We draw upon prior studies by Carter et al. (2008), Cohen et al. (2011), and Chang et al. (2012), in structuring our research design, but we extend our analyses to include all components of compensation, both cash and non-cash, to include not only CEOs but all top executives; and to consider both accounting-based and market-based measures of performance. We further explore the differential reaction to SOX among two subsamples of executives: CEOs and CFOs, and other executives.

Our results show that pay-performance sensitivity using either market-based or accounting-based measures of performance increased significantly following the passage of SOX. When we further decompose executive pay into its cash-based and equity-based components, we find evidence of an increase in the link between performance and executive compensation for five of six measures for each performance metric. The evidence presented here is consistent with an improvement in the perceived credibility of reported earnings and an increased reliance on earnings in compensation contracts, which in turn resulted in an increase in the link between executive compensation and shareholder wealth. We find that the reaction was more consistently positive across more specifications for the subsample of other executives than for the subsample of CEOs and CFOs, suggesting a mitigating effect for these high-risk executives (consistent with the arguments advanced by Cohen et al., 2011).

Our findings clearly suggest a positive effect of SOX on pay-performance sensitivity, from which one can infer improvement in corporate governance and lessened agency costs. Higher pay-performance sensitivity is consistent with more productive managerial effort and better alignment of shareholder-manager interests. While some prior research finds a weakened link between executive pay and performance, our study, using a more comprehensive sample and finer decomposition of empirical measures, finds the link generally strengthened. We believe this evidence of an important positive consequence of SOX, whether intended or indirect, constitutes a valuable contribution to the literature.

We acknowledge certain limitations of our study. For example, we cannot conclude with certainty whether the evidence presented reflects changes in managerial behavior induced by SOX or a general shift in shareholder attitudes, as we are unable to observe either directly. We do, however, control for contemporaneous changes around the time of SOX passage, including the possible effects from the mandated change in the accounting for stock options and the bursting of the "tech" bubble. Further, we recognize that SOX imposes significant costs on businesses, and the tradeoffs between costs and benefits are not addressed here. We do not, and cannot, evaluate the total welfare effect of this far-reaching piece of legislation. Rather, we focus on changes in the link between executive pay and firm performance, and in so doing, we draw inferences regarding one important aspect of societal welfare.

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Figure 1A

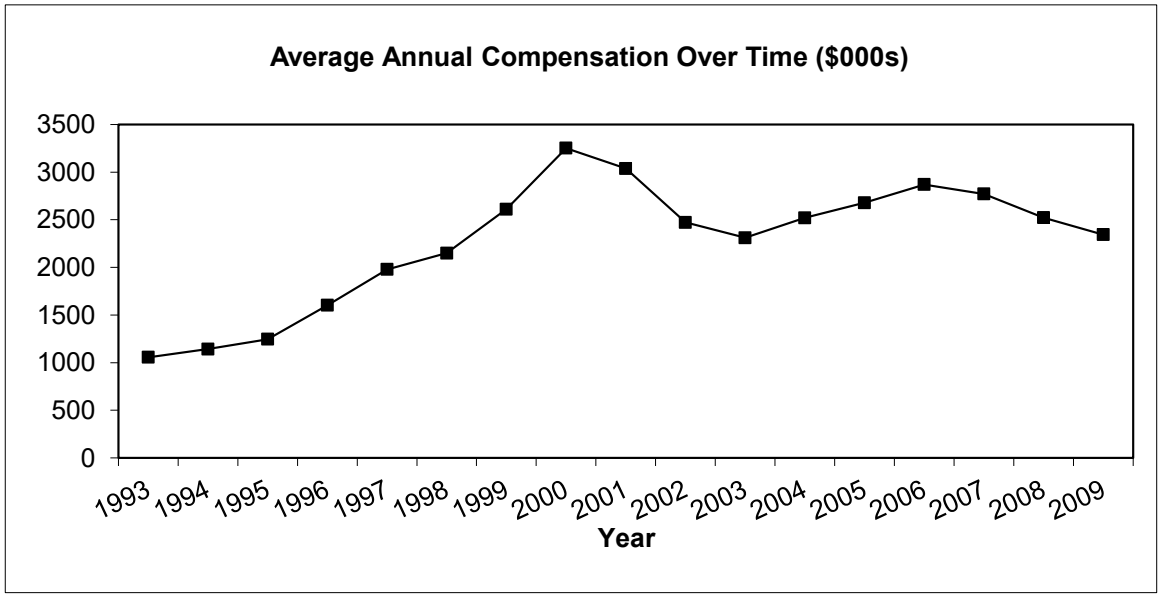
Average Annual Compensation Over Time ($000s)
3500
3000
2500
2000
1500
1000
500
0
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Year

Figure 1B

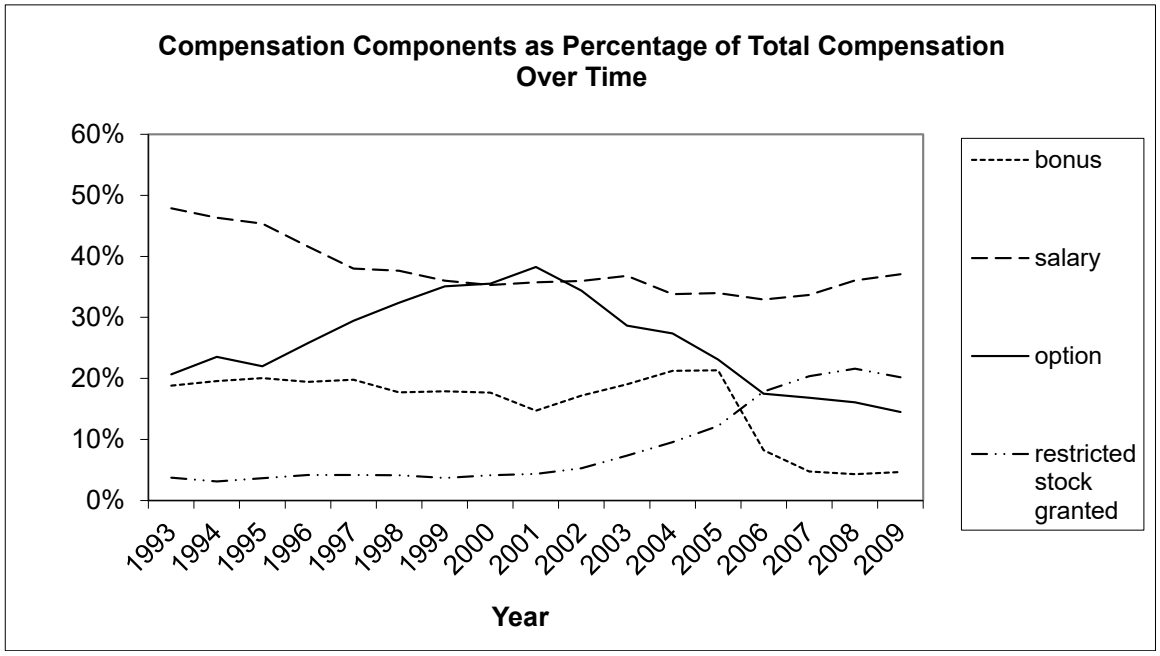
Compensation Components as Percentage of Total Compensation Over Time
60%
50%
40%
30%
20%
10%
0%
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Year
bonus
salary
option
restricted stock granted

Figure 1C

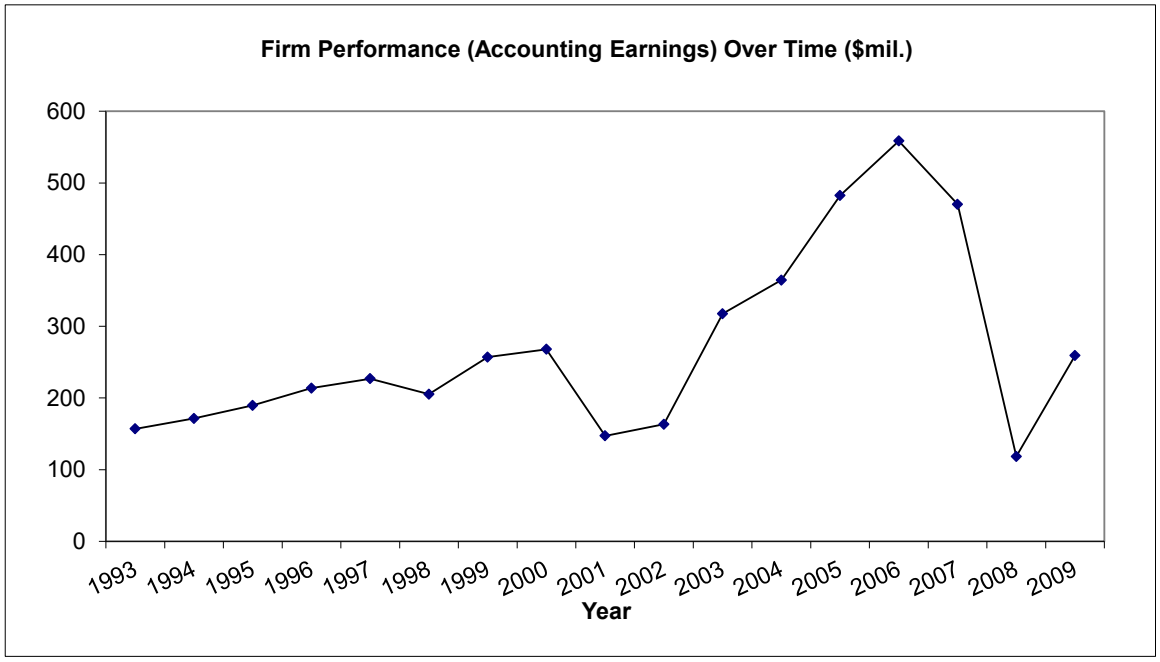
Firm Performance (Accounting Earnings) Over Time ($mil.)
600
500
400
300
200
100
0
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Year

Figure 1D

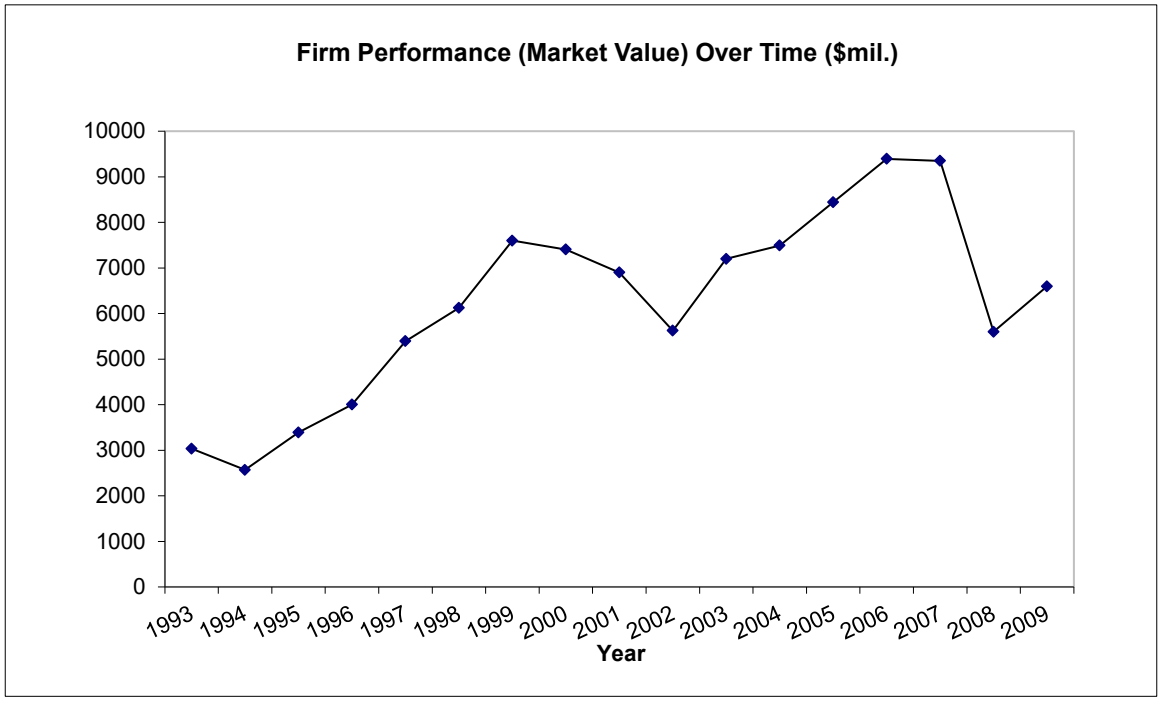
Firm Performance (Market Value) Over Time ($mil.)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Year

Table 1
Sample Selection

Sample Selection Procedures	Number of Executive-Year Observations
Initial sample obtained from ExecuComp	165,898
Less: Missing executive total pay data	(63,419)
Missing financial data	(10,057)
2001 and 2002 data	(14,880)
Missing executive component data	(70,612)
Final sample	6,930

Table 2

Summary Statistics of Executive Compensation Components and Firm Performance Measures over Time (1993-2006)

Panel A: Mean value of Executive Compensation Components and Firm Performance Measures

Year	1993	1994	1995	1996	1997	1998	1999	2000	1993-2000
Total compensation[a]	1.80	1.91	2.10	2.50	3.60	3.31	4.65	5.45	3.29
Bonus as a % of total compensation	19.69%	19.47%	20.61%	20.09%	19.20%	17.45%	16.96%	17.73%	18.81%
Salary as a % of total compensation	32.94%	30.81%	31.81%	28.48%	26.21%	25.94%	25.32%	24.55%	27.84%
Option as a % of total compensation	23.05%	27.31%	22.69%	27.04%	29.35%	31.93%	34.54%	34.20%	29.21%
Restricted stock granted as a % of total compensation	16.48%	15.16%	16.66%	16.28%	16.76%	18.43%	16.54%	17.15%	16.76%
Δ in total compensation	0.15	0.32	0.18	0.58	1.16	0.41	1.45	1.08	0.72
Δ in shareholder value	-3.34	-300.97	1116.33	590.82	43.58	874.08	-451.34	-58.11	253.78
Δ in earnings before nonrecurring items	55.62	31.41	59.65	63.20	66.20	-16.48	189.09	168.12	78.63

Year	2003	2004	2005	2003-2005	t-test for diff. in means[b]	
Total compensation	3.84	4.19	3.99	4.02	4.26	***
Bonus as a % of total compensation	20.26%	22.11%	21.78%	21.50%	10.58	***
Salary as a % of total compensation	25.59%	21.81%	22.60%	23.10%	-14.76	***
Option as a % of total compensation	26.21%	25.53%	23.91%	25.03%	-10.85	***
Restricted stock granted as a % of total compensation	21.22%	22.59%	23.53%	22.63%	18.66	***
Δ in total compensation	0.19	0.50	0.37	0.37	-3.50	***
Δ in shareholder value	1,986.80	861.88	391.02	953.30	4.76	***
Δ in earnings before nonrecurring items	123.81	192.41	128.34	148.22	5.02	***

[a]Amounts for total compensation, changes in total compensation, changes in shareholder value, and changes in earnings are given in millions of dollars.

[b]Tests for difference in means between 1993-2000 and 2003-2005 on various components of compensation.

*** indicates significant differences in means at the 1% level.

Table 2
(Continued)

Panel B: Coefficient estimates from regressing executive compensation components and change in performance measures on TIME and POST

Dependent Variables	Dependent Var. = $\alpha_0 + \alpha_1$*TIME + α_2*POST					
	α_0		α_1		α_2	
Total compensation [a]	1.404	***	0.497	***	-2.935	***
	(6.17)		(9.65)		(-7.00)	
Bonus as a % of total compensation	0.202	***	-0.004	***	0.054	***
	(63.38)		(-5.18)		(9.26)	
Salary as a % of total compensation	0.327	***	-0.013	***	0.046	***
	(79.25)		(-13.59)		(6.04)	
Option as a % of total compensation	0.235	***	0.015	***	-0.152	***
	(46.93)		(13.29)		(-16.56)	
Restricted stock granted as a % of	0.156	***	0.003	***	0.037	***
total compensation	(39.47)		(3.38)		(5.01)	
Δ in total compensation	0.130		0.154	***	-1.482	***
	(0.95)		(5.01)		(-5.92)	
Δ in shareholder value	701.898	***	-117.891	***	1567.157	***
	(3.66)		(-2.72)		(4.44)	
Δ in earnings before nonrecurring items	20.356		15.326	***	-43.186	
	(1.21)		(4.03)		(-1.39)	

The two-tailed t-statistics are in parentheses under the coefficient estimates. *** indicates that the regression coefficients are significantly different from zero at the 1% level.
[a] Amounts for total compensation, changes in total compensation, changes in shareholder value, and changes in earnings are given in millions of dollars.

POST = a dummy variable equals to 1 if data are from 2003-2005; 0 if data are from 1993-2000; and
TIME = calendar year minus 1993.

Table 3
Descriptive Statistics and Correlation Matrix

Panel A: Descriptive statistics

Variable	n	Mean	Median	Min	Max	Std Dev
ΔlnTOTAL_PAY	6,930	0.14	0.12	-3.22	3.73	0.39
ΔlnBONUS	6,930	0.14	0.12	-7.23	5.99	0.64
ΔlnOPTION	6,930	0.12	0.12	-5.34	5.90	0.77
ΔlnRST_STOCK	6,930	0.16	0.13	-6.51	5.75	0.91
ΔlnSHRHLDR_VALUE	6,930	0.05	0.09	-2.78	2.10	0.35
ΔlnEARNING	6,248	0.19	0.16	-5.00	5.17	0.64
POST	6,930	0.42	0	0	1	0.49
lnASSETS	6,930	8.36	8.16	4.46	14.22	1.72
ΔlnIND_PERFORMANCE	6,930	0.02	0.02	-1.13	1.00	0.23
BM	6,930	0.44	0.42	-77.58	7.89	1.36
OWN	6,930	0.00	0.00	0.00	0.42	0.02
CLOSEHELD	6,930	0.03	0.00	0.00	1.00	0.16
OPTION%	6,930	0.27	0.24	0.00	0.97	0.17
TECH	6,930	0.02	0	0	1	0.13
REGULATED	6,930	0.33	0	0	1	0.47
INVEST	6,930	0.08	0.07	-0.11	0.68	0.08
PERSIST	6,511	0.29	0.30	-1.68	2.55	0.36

Panel A reports the descriptive statistics of the variables used in the main empirical tests. The sample covers the years from 1993-2005 (excluding 2001 and 2002) and contains 6,930 executive-year observations.

Variable definitions:

ΔlnTOTAL_PAY = yearly change in natural log of total executive compensation;
ΔlnBONUS = yearly change in natural log of bonus;
ΔlnOPTION = yearly change in natural log of stock options;
ΔlnRST_STOCK = yearly change in natural log of restricted stock granted;
ΔlnSHRHLDR_VALUE = yearly change in natural log of shareholder value;
ΔlnEARNING = yearly change in natural log of earnings before nonrecurring items;
POST = a dummy variable equals to 1 if data are from 2003-2005; 0 if data are from 1993-2000;
lnASSETS = natural log of total assets;
ΔlnIND_PERFORMANCE = change in natural log of shareholder value of all *Compustat* companies in the same two-digit SIC code, averaged across sample years;
BM = book-to-market ratio;
OWN = executive ownership calculated as shares (excluding stock options) owned by executives, divided by total common shares outstanding;
CLOSEHELD = a dummy variable equals to 1 if any shareholder owns more than 20% of the shares;
OPTION% = stock options as a percentage of total compensation;

TECH	= a dummy variable equals to 1 if the first three-digit of SIC code is 737;
REGULATED	= a dummy variable equals to 1 if the first two-digit of SIC code is between 4400 and 5000 or between 6000 and 6999;
INVEST	= total investments calculated as the sum of research and development expenditures, acquisitions, and net capital expenditures (capital expenditures less sale of property, plant, and equipment) made by the firm divided by average total assets;
PERSIST	= earnings persistence.

Table 3
(Continued)

Panel B: Correlation Matrix[a]

Variable		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
ΔlnTOTAL_PAY	A	1	0.33	**0.67**	**0.51**	0.09	0.12	-0.08	0.06	0.01	-0.05	0.00	0.00	0.13	-0.01	0.03	0.00	-0.03
ΔlnBONUS	B	**0.42**	1	0.07	0.11	0.23	0.26	0.01	0.04	0.05	-0.07	0.00	0.01	-0.07	0.02	0.02	-0.01	-0.01
ΔlnOPTION	C	**0.64**	0.10	1	0.15	0.00	0.04	-0.14	0.02	-0.05	-0.03	0.00	0.00	0.35	-0.01	0.01	0.04	-0.03
ΔlnRST_STOCK	D	**0.54**	0.18	0.16	1	0.05	0.03	0.03	0.03	0.02	-0.04	0.01	0.00	-0.09	-0.01	0.03	-0.03	0.00
ΔlnSHRHLDR_VALUE	E	0.12	0.26	-0.02	0.10	1	0.20	0.15	0.02	0.34	0.09	0.00	-0.04	-0.07	0.02	0.01	-0.01	0.03
ΔlnEARNING	F	0.21	0.32	0.09	0.10	0.21	1	0.05	0.01	0.12	-0.15	0.00	-0.02	-0.01	0.01	-0.04	0.02	-0.02
POST	G	-0.08	0.00	-0.17	0.04	0.15	0.04	1	0.10	0.38	-0.03	-0.02	-0.01	-0.13	0.04	0.01	-0.11	0.12
lnASSETS	H	0.06	0.05	0.03	0.05	0.03	-0.03	0.10	1	0.07	0.03	-0.07	-0.10	0.07	-0.06	**0.47**	-0.36	-0.06
ΔlnIND_PERFORMANCE	I	0.00	0.07	-0.10	0.04	0.35	0.12	0.37	0.10	1	-0.02	-0.03	-0.02	-0.11	-0.01	0.09	-0.06	0.00
BM	J	-0.08	-0.06	-0.07	-0.04	-0.13	-0.12	0.01	0.04	0.01	1	0.00	0.00	-0.01	-0.01	0.04	-0.03	0.01
OWN	K	-0.01	-0.01	-0.01	0.00	-0.01	0.04	-0.03	-0.37	0.01	0.07	1	0.23	0.02	-0.01	-0.01	0.01	0.05
CLOSEHELD	L	-0.01	0.01	0.00	0.00	-0.03	0.00	-0.01	-0.10	-0.02	0.00	0.05	1	0.03	0.05	-0.03	0.03	0.07
OPTION%	M	0.07	-0.07	0.32	-0.08	-0.04	-0.01	-0.10	0.09	-0.10	-0.21	-0.06	0.02	1	0.13	-0.11	0.16	-0.05
TECH	N	0.00	0.02	-0.01	-0.01	0.02	0.03	0.04	-0.07	-0.01	-0.09	-0.04	0.05	0.11	1	-0.09	0.17	0.00
REGULATED	O	0.03	0.03	0.02	0.03	0.02	-0.06	0.01	**0.46**	0.13	0.23	-0.01	-0.03	-0.12	-0.09	1	**-0.41**	0.07
INVEST	P	-0.01	-0.04	0.03	-0.04	-0.04	0.05	-0.12	-0.38	-0.10	-0.26	-0.04	0.03	0.14	0.12	**-0.53**	1	-0.06
PERSIST	Q	-0.02	-0.02	-0.03	0.01	0.02	0.03	0.12	-0.06	0.01	0.07	0.07	0.06	-0.03	-0.01	0.08	-0.11	1

Panel B reports the correlation matrix of the variables used in the main empirical tests. Bold text indicates ρ >|0.40| with significance at 0.05 level or better. The lower diagonal of the matrix reports Spearman rank correlations, and the upper diagonal reports Pearson correlations. The sample covers the years from 1993-2005 (excluding 2001 and 2002) and contains 6,930 executive-year observations.

[a] See Panel A for variable definitions.

Table 4
Sensitivity between Executive Compensation Components and Shareholder Value

	Panel A: Executive Pay						Panel B: Executive Pay Components					
	a		b		c		a		b		c	
Variable	ΔlnTOTAL_PAY		ΔlnCASH_COMP		ΔlnEQUITY_COMP		ΔlnBONUS		ΔlnOPTION		ΔlnRST_STOCK	
INTERCEPT	-0.040		0.085	***	-0.171	***	0.053		-0.424	***	0.281	***
	(-1.11)		(3.62)		(-3.00)		(0.94)		(-6.44)		(3.32)	
ΔlnSHRHLDR_VALUE	0.512	***	0.171	***	0.573	***	1.041	***	0.571	***	0.398	**
	(6.60)		(3.34)		(4.61)		(8.42)		(3.97)		(2.15)	
POST	-0.029		-0.053	***	0.057		-0.079	**	0.073	*	-0.022	
	(-1.32)		(-3.70)		(1.63)		(-2.31)		(1.84)		(-0.42)	
lnASSETS	0.013	***	0.012	***	0.001		0.024	***	-0.013	**	0.021	***
	(4.01)		(5.41)		(0.25)		(4.67)		(-2.18)		(2.71)	
ΔlnIND_PERFORMANCE	0.114	***	0.008		0.115	**	-0.002		0.183	***	0.072	
	(3.87)		(0.39)		(2.43)		(-0.04)		(3.35)		(1.02)	
BM	-0.052	***	-0.044	***	-0.036		-0.092	***	0.063	*	-0.172	***
	(-2.85)		(-3.65)		(-1.24)		(-3.18)		(1.88)		(-3.98)	
OWN	0.022		-0.163		-0.044		-0.071		-0.636		0.598	
	(0.07)		(-0.82)		(-0.09)		(-0.15)		(-1.14)		(0.83)	
CLOSEHELD	0.008		0.024		0.008		0.072		0.003		0.053	
	(0.28)		(1.24)		(0.18)		(1.56)		(0.06)		(0.76)	
OPTION%	0.301	***	-0.085	***	0.870	***	-0.304	***	1.750	***	-0.552	***
	(9.96)		(-4.23)		(17.94)		(-6.30)		(31.26)		(-7.68)	
TECH	-0.078	**	0.098	***	-0.230	***	0.194	***	-0.312	***	-0.010	
	(-2.13)		(4.08)		(-3.94)		(3.34)		(-4.61)		(-0.11)	
REGULATED	0.020	*	-0.001		0.059	***	0.006		0.099	***	-0.005	
	(1.67)		(-0.18)		(3.05)		(0.29)		(4.46)		(-0.19)	
INVEST	-0.037		0.029		-0.197	*	0.042		-0.205		-0.215	
	(-0.55)		(0.66)		(-1.82)		(0.39)		(-1.64)		(-1.34)	
POST	**0.106**	***	**0.136**	***	**0.159**	***	**0.296**	***	**0.199**	***	**0.052**	
***ΔlnSHRHLDR_VALUE**	**(3.45)**		**(6.67)**		**(3.22)**		**(6.03)**		**(3.48)**		**(0.70)**	
lnASSETS	-0.040	***	-0.007		-0.059	***	-0.091	***	-0.063	***	-0.057	**
*ΔlnSHRHLDR_VALUE	(-4.29)		(-1.21)		(-3.96)		(-6.14)		(-3.66)		(-2.56)	
BM	-0.010		-0.009	*	-0.001		-0.013		0.035	***	-0.054	***
*ΔlnSHRHLDR_VALUE	(-1.42)		(-1.95)		(-0.06)		(-1.20)		(2.77)		(-3.31)	
OWN	-0.487		0.398		-0.905		-0.124		-1.484		-1.095	
*ΔlnSHRHLDR_VALUE	(-0.59)		(0.73)		(-0.68)		(-0.09)		(-0.97)		(-0.56)	
CLOSEHELD	-0.209	***	-0.028		-0.233	**	-0.143		-0.383	***	-0.079	
*ΔlnSHRHLDR_VALUE	(-2.90)		(-0.60)		(-2.02)		(-1.25)		(-2.86)		(-0.46)	
OPTION%	-0.203	***	0.103	**	-0.162		0.317	**	0.139		0.119	
*ΔlnSHRHLDR_VALUE	(-2.58)		(1.99)		(-1.29)		(2.52)		(0.96)		(0.63)	
TECH	0.037		-0.294	***	0.129		-0.750	***	-0.063		0.392	*
*ΔlnSHRHLDR_VALUE	(0.45)		(-5.29)		(0.96)		(-5.60)		(-0.40)		(1.96)	
REGULATED	0.042		-0.004		0.107	*	0.032		-0.084		0.248	***
*ΔlnSHRHLDR_VALUE	(1.11)		(-0.18)		(1.78)		(0.53)		(-1.20)		(2.78)	
INVEST	-0.264		-0.262	**	-0.017		-0.299		-0.209		0.551	
*ΔlnSHRHLDR_VALUE	(-1.61)		(-2.42)		(-0.07)		(-1.15)		(-0.69)		(1.42)	
n	6,930		6,930		6,930		6,930		6,930		6,930	
Adj.R^2	0.07		0.06		0.08		0.09		0.17		0.02	
F-value	17.70	***	17.35	***	21.56	***	24.40	***	50.84	***	5.36	***

T-statistics are in the parenthesis under the coefficient estimates.
Year dummies are included in the model but are not tabulated.
*, **, and *** indicate the regression coefficients are significantly different from zero at the 10%, 5%, and 1% level, respectively (two-tailed).

Variable definitions:

ΔlnTOTAL_PAY	= yearly change in natural log of total executive compensation;
ΔlnCASH_COMP	= yearly change in natural log of cash compensation, calculated as the sum of salaries and bonuses;
ΔlnEQUITY_COMP	= yearly change in natural log of equity compensation, calculated as the sum of stock options and restricted stock granted;
ΔlnBONUS	= yearly change in natural log of bonus;
ΔlnOPTION	= yearly change in natural log of stock options;
ΔlnRST_STOCK	= yearly change in natural log of restricted stock granted;
ΔlnSHRHLDR_VALUE	= yearly change in natural log of shareholder value;
POST	= a dummy variable equals to 1 if data are from 2003-2005; 0 if data are from 1993-2000;
lnASSETS	= natural log of total assets;
ΔlnIND_PERFORMANCE	= change in natural log of shareholder value of all *Compustat* companies in the same two-digit SIC code, averaged across sample years;
BM	= book-to-market ratio;
OWN	= executive ownership calculated as shares (excluding stock options) owned by executives, divided by total common shares outstanding;
CLOSEHELD	= a dummy variable equals to 1 if any shareholder owns more than 20% of the shares;
OPTION%	= stock options as a percentage of total compensation;
TECH	= a dummy variable equals to 1 if the first three-digit of SIC code is 737;
REGULATED	= a dummy variable equals to 1 if the first two-digit of SIC code is between 4400 and 5000 or between 6000 and 6999;
INVEST	= total investments calculated as the sum of research and development expenditures, acquisitions, and net capital expenditures (capital expenditures less sale of property, plant, and equipment) made by the firm divided by average total assets.

Table 5
Sensitivity between Executive Compensation Components and Accounting Earnings

	Panel A: Executive Pay						Panel B: Executive Pay Components					
	a		b		c		a		b		c	
Variable	ΔlnTOTAL_PAY		ΔlnCASH_COMP		ΔlnEQUITY_COMP		ΔlnBONUS		ΔlnOPTION		ΔlnRST_STOCK	
INTERCEPT	0.005		0.099	***	-0.088		0.103	*	-0.311	***	0.259	***
	(0.14)		(3.94)		(-1.42)		(1.66)		(-4.26)		(2.83)	
ΔlnEARNING	0.142	***	0.000		0.295	***	0.337	***	0.214	**	0.183	*
	(3.21)		(0.01)		(4.06)		(4.63)		(2.51)		(1.71)	
POST	-0.045	**	-0.103	***	0.057		-0.213	***	0.091	**	-0.010	
	(-2.13)		(-7.34)		-1.64		(-6.12)		(2.24)		(-0.19)	
lnASSETS	0.010	***	0.011	***	-0.006		0.025	***	-0.023	***	0.016	*
	(2.80)		(4.73)		(-1.11)		(4.43)		(-3.35)		(1.86)	
ΔlnIND_PERFORMANCE	0.005		0.005		0.009		0.018	*	-0.012		0.027	*
	(0.78)		(1.23)		(0.87)		(1.83)		(-1.03)		(1.87)	
BM	-0.083	***	-0.062	***	-0.080	**	-0.165	***	0.034		-0.182	***
	(-4.31)		(-4.84)		(-2.52)		(-5.20)		(0.92)		(-3.89)	
OWN	-0.168		-0.621	***	-0.195		-0.965	*	-0.559		0.378	
	(-0.50)		(-2.82)		(-0.36)		(-1.76)		(-0.87)		(0.47)	
CLOSEHELD	0.003		0.051	***	-0.009		0.128	***	-0.037		0.068	
	(0.10)		(2.63)		(-0.18)		(2.66)		(-0.66)		(0.96)	
OPTION%	0.316	***	-0.088	***	0.901	***	-0.294	***	1.825	***	-0.513	***
	(9.69)		(-4.07)		(16.84)		(-5.48)		(29.03)		(-6.49)	
TECH	-0.210	***	0.077	**	-0.400	***	0.175	**	-0.480	***	-0.241	**
	(-4.54)		(2.51)		(-5.29)		(2.31)		(-5.40)		(-2.15)	
REGULATED	0.016		-0.002		0.067	***	-0.004		0.111	***	-0.020	
	(1.31)		(-0.20)		(3.23)		(-0.18)		(4.60)		(-0.65)	
INVEST	-0.064		-0.002		-0.216	*	-0.052		-0.201		-0.258	
	(-0.84)		(-0.05)		(-1.74)		(-0.42)		(-1.38)		(-1.41)	
PERSIST	-0.002		0.018	*	-0.012		0.032		-0.030		0.033	
	(-0.14)		(1.89)		(-0.51)		(1.35)		(-1.06)		(0.95)	
POST*ΔlnEARNING	**0.041**	***	**0.033**	***	**0.045**	*	**0.052**	**	**0.035**		**0.076**	**
	(2.59)		**(3.13)**		**(1.75)**		**(1.99)**		**(1.16)**		**(1.99)**	
lnASSETS*ΔlnEARNING	-0.008		0.011	***	-0.029	***	-0.017	**	-0.030	***	-0.016	
	(-1.49)		(3.40)		(-3.55)		(-2.01)		(-3.14)		(-1.28)	
BM*ΔlnEARNING	-0.019		-0.011		-0.026		0.033		0.081	**	-0.172	***
	(-1.08)		(-0.95)		(-0.88)		(1.13)		(2.36)		(-3.97)	
OWN*ΔlnEARNING	1.002		2.024	***	0.763		3.290	**	0.279		-0.160	
	(1.22)		(3.73)		(0.57)		(2.44)		(0.18)		(-0.08)	
CLOSEHELD*ΔlnEARNING	0.043		-0.115	***	0.115		-0.388	***	-0.035		0.316	***
	(0.90)		(-3.62)		(1.47)		(-4.94)		(-0.38)		(2.72)	
OPTION%*ΔlnEARNING	-0.121	***	-0.080	***	-0.098		-0.202	***	0.035		0.059	
	(-2.76)		(-2.78)		(-1.37)		(-2.81)		(0.42)		(0.55)	
TECH*ΔlnEARNING	0.252	**	-0.060		0.298	*	-0.144		0.305		0.336	
	(2.52)		(-0.91)		(1.82)		(-0.88)		(1.59)		(1.39)	
REGULATED*ΔlnEARNING	0.056	***	0.037	***	0.107	***	0.136	***	0.043		0.210	***
	(2.77)		(2.77)		(3.21)		(4.07)		(1.08)		(4.26)	
INVEST*ΔlnEARNING	0.012		0.079		-0.028		0.196		0.120		-0.143	
	(0.10)		(1.02)		(-0.14)		(1.02)		(0.53)		(-0.50)	
PERSIST*ΔlnEARNING	-0.015		0.002		-0.026		0.004		0.017		-0.064	
	(-0.70)		(0.14)		(-0.76)		(0.12)		(0.43)		(-1.26)	
n	5,782		5,782		5,782		5,782		5,782		5,782	
Adj.R^2	0.07		0.09		0.09		0.10		0.18		0.02	
F-value	14.87	***	20.59	***	18.97	***	21.6	***	42.55	***	5.64	***

T-statistics are in the parenthesis under the coefficient estimates.
Year dummies are included in the model but are not tabulated.
*, **, and *** indicate the regression coefficients are significantly different from zero at the 10%, 5%, and 1% level, respectively (two-tailed).

Variable definitions:

ΔlnTOTAL_PAY	= yearly change in natural log of total executive compensation;
ΔlnCASH_COMP	= yearly change in natural log of cash compensation, calculated as the sum of salaries and bonuses;
ΔlnEQUITY_COMP	= yearly change in natural log of equity compensation, calculated as the sum of stock options and restricted stock granted;
ΔlnBONUS	= yearly change in natural log of bonus;
ΔlnOPTION	= yearly change in natural log of stock options;
ΔlnRST_STOCK	= yearly change in natural log of restricted stock granted;
ΔlnEARNING	= yearly change in natural log of earnings before nonrecurring items;
POST	= a dummy variable equals to 1 if data are from 2003-2005; 0 if data are from 1993-2000;
lnASSETS	= natural log of total assets;
ΔlnIND_PERFORMANCE	= change in natural log of shareholder value of all *Compustat* companies in the same two-digit SIC code, averaged across sample years;
BM	= book-to-market ratio;
OWN	= executive ownership calculated as shares (excluding stock options) owned by executives, divided by total common shares outstanding;
CLOSEHELD	= a dummy variable equals to 1 if any shareholder owns more than 20% of the shares;
OPTION%	= stock options as a percentage of total compensation;
TECH	= a dummy variable equals to 1 if the first three-digit of SIC code is 737;
REGULATED	= a dummy variable equals to 1 if the first two-digit of SIC code is between 4400 and 5000 or between 6000 and 6999;
INVEST	= total investments calculated as the sum of research and development expenditures, acquisitions, and net capital expenditures (capital expenditures less sale of property, plant, and equipment) made by the firm divided by average total assets;
PERSIST	= earnings persistence.

Table 6
Sensitivity between Executive Compensation and Shareholder Value: CEO/CFO vs. Other Executives

	Panel A: CEO / CFO						Panel B: Other Executives					
	a		b		c		a		b		c	
Variable	ΔlnTOTAL_PAY		ΔlnCASH_COMP		ΔlnEQ_COMP		ΔlnTOTAL_PAY		ΔlnCASH_COMP		ΔlnEQ_COMP	
INTERCEPT	-0.066		0.175	***	-0.229	*	-0.027		0.065	**	-0.154	**
	(-0.78)		(3.09)		(-1.78)		(-0.68)		(2.54)		(-2.40)	
ΔlnSHRHLDR_VALUE	0.397	**	0.202		0.349		0.550	***	0.172	***	0.637	***
	(2.06)		(1.57)		(1.19)		(6.39)		(3.04)		(4.52)	
POST	0.025		-0.061	*	0.121		-0.043	*	-0.051	***	0.040	
	(0.50)		(-1.79)		(1.57)		(-1.83)		(-3.28)		(1.04)	
lnASSETS	0.013	*	0.007		0.003		0.012	***	0.013	***	0.000	
	(1.73)		(1.44)		(0.23)		(3.51)		(5.37)		(0.07)	
ΔlnIND_PERFORMANCE	0.086		0.022		0.066		0.118	***	0.001		0.125	**
	(1.23)		(0.48)		(0.62)		(3.66)		(0.02)		(2.38)	
BM	-0.051		-0.049	*	-0.025		-0.052	***	-0.043	***	-0.038	
	(-1.15)		(-1.67)		(-0.37)		(-2.66)		(-3.30)		(-1.18)	
OWN	-0.064		-0.276		-0.080		-0.283		-0.730		0.106	
	(-0.15)		(-1.00)		(-0.13)		(-0.32)		(-1.27)		(0.07)	
CLOSEHELD	0.055		0.017		0.098		0.002		0.032		-0.014	
	(0.68)		(0.32)		(0.80)		(0.05)		(1.60)		(-0.27)	
OPTION%	0.271	***	-0.115	***	0.781	***	0.306	***	-0.085	***	0.907	***
	(4.08)		(-2.60)		(7.74)		(8.93)		(-3.77)		(16.16)	
TECH	-0.100		0.112	*	-0.257	*	-0.065	*	0.099	***	-0.219	***
	(-1.02)		(1.72)		(-1.73)		(-1.67)		(3.87)		(-3.43)	
REGULATED	0.011		-0.028		0.075	*	0.022	*	0.006		0.054	**
	(0.39)		(-1.42)		(1.67)		(1.73)		(0.70)		(2.56)	
INVEST	-0.226		-0.069		-0.361		0.004		0.053		-0.174	
	(-1.42)		(-0.65)		(-1.49)		(0.05)		(1.10)		(-1.44)	
POST	**0.101**		**0.101**	**	**0.168**		**0.114**	***	**0.145**	***	**0.166**	***
***ΔlnSHRHLDR_VALUE**	**(1.31)**		**(1.97)**		**(1.44)**		**(3.42)**		**(6.61)**		**(3.05)**	
lnASSETS	-0.024		-0.006		-0.032		-0.045	***	-0.008		-0.067	***
*ΔlnSHRHLDR_VALUE	(-1.08)		(-0.40)		(-0.94)		(-4.35)		(-1.24)		(-3.97)	
BM	-0.007		-0.008		0.004		-0.013	*	-0.011	**	-0.002	
*ΔlnSHRHLDR_VALUE	(-0.41)		(-0.73)		(0.15)		(-1.71)		(-2.29)		(-0.16)	
OWN	-0.880		0.104		-1.147		0.871		0.773		0.278	
*ΔlnSHRHLDR_VALUE	(-0.77)		(0.14)		(-0.66)		(0.27)		(0.36)		(0.05)	
CLOSEHELD	-0.215		-0.044		-0.257		-0.210	***	-0.020		-0.238	**
*ΔlnSHRHLDR_VALUE	(-0.84)		(-0.26)		(-0.66)		(-2.83)		(-0.40)		(-1.96)	
OPTION%	-0.355	**	0.038		-0.335		-0.169	*	0.114	*	-0.130	
*ΔlnSHRHLDR_VALUE	(-2.02)		(0.33)		(-1.25)		(-1.90)		(1.95)		(-0.89)	
TECH	-0.427	*	-0.494	***	-0.478		0.154	*	-0.244	***	0.282	*
*ΔlnSHRHLDR_VALUE	(-1.91)		(-3.32)		(-1.41)		(1.72)		(-4.13)		(1.92)	
REGULATED	0.081		0.014		0.116		0.034		-0.008		0.108	
*ΔlnSHRHLDR_VALUE	(0.87)		(0.23)		(0.82)		(0.84)		(-0.31)		(1.63)	
INVEST	0.726	*	-0.049		1.332	**	-0.514	***	-0.320	***	-0.337	
*ΔlnSHRHLDR_VALUE	(1.81)		(-0.18)		(2.19)		(-2.88)		(-2.72)		(-1.15)	
n	1,283		1,283		1,283		4,589		4,589		4,589	
Adj.R^2	0.07		0.10		.08		0.07		0.09		0.09	
F-value	3.89	***	5.35	***	4.59	***	11.58	***	16.28	***	14.92	***

T-statistics are in the parenthesis under the coefficient estimates.
Year dummies are included in the model but are not tabulated.
*, **, and *** indicate the regression coefficients are significantly different from zero at the 10%, 5%, and 1% level, respectively (two-tailed).

Variable definitions:

ΔlnTOTAL_PAY	= yearly change in natural log of total executive compensation;
ΔlnCASH_COMP	= yearly change in natural log of cash compensation, calculated as the sum of salaries and bonuses;
ΔlnEQUITY_COMP	= yearly change in natural log of equity compensation, calculated as the sum of stock options and restricted stock granted;
ΔlnSHRHLDR_VALUE	= yearly change in natural log of shareholder value;
POST	= a dummy variable equals to 1 if data are from 2003-2005; 0 if data are from 1993-2000;
lnASSETS	= natural log of total assets;
ΔlnIND_PERFORMANCE	= change in natural log of shareholder value of all *Compustat* companies in the same two-digit SIC code, averaged across sample years;
BM	= book-to-market ratio;
OWN	= executive ownership calculated as shares (excluding stock options) owned by executives, divided by total common shares outstanding;
CLOSEHELD	= a dummy variable equals to 1 if any shareholder owns more than 20% of the shares;
OPTION%	= stock options as a percentage of total compensation;
TECH	= a dummy variable equals to 1 if the first three-digit of SIC code is 737;
REGULATED	= a dummy variable equals to 1 if the first two-digit of SIC code is between 4400 and 5000 or between 6000 and 6999;
INVEST	= total investments calculated as the sum of research and development expenditures, acquisitions, and net capital expenditures (capital expenditures less sale of property, plant, and equipment) made by the firm divided by average total assets.

Table 7
Sensitivity between Executive Compensation and Accounting Earnings: CEO/CFO vs. Other Executives

	Panel A: CEO / CFO						Panel B: Other Executives					
	a		b		c		a		b		c	
Variable	ΔlnTOTAL_PAY		ΔlnCASH_COMP		ΔlnEQUITY_COMP		ΔlnTOTAL_PAY		ΔlnCASH_COMP		ΔlnEQUITY_COMP	
INTERCEPT	0.027		0.194	***	-0.061		0.006		0.080	***	-0.089	
	(0.31)		(3.23)		(-0.44)		(0.14)		(2.89)		(-1.27)	
ΔlnEARNING	0.046		-0.091		0.161		0.169	***	0.017		0.317	***
	(0.33)		(-0.98)		(0.75)		(3.49)		(0.54)		(3.93)	
POST	-0.016		-0.122	***	0.081		-0.056	**	-0.100	***	0.048	
	(-0.32)		(-3.69)		(1.06)		(-2.38)		(-6.48)		(1.25)	
lnASSETS	0.006		0.004		-0.013		0.011	***	0.012	***	-0.005	
	(0.74)		(0.80)		(-1.03)		(2.75)		(4.88)		(-0.78)	
ΔlnIND_PERFORMANCE	0.018		0.013		0.028		0.001		0.003		0.002	
	(1.27)		(1.33)		(1.27)		(0.08)		(0.59)		(0.22)	
BM	-0.106	**	-0.093	***	-0.086		-0.076	***	-0.052	***	-0.074	**
	(-2.35)		(-3.07)		(-1.22)		(-3.55)		(-3.75)		(-2.08)	
OWN	-0.102		-0.622	**	-0.045		-0.966		-1.520	**	-1.209	
	(-0.23)		(-2.09)		(-0.07)		(-1.01)		(-2.42)		(-0.76)	
CLOSEHELD	0.008		0.049		0.009		0.003		0.058	***	-0.014	
	(0.10)		(0.95)		(0.07)		(0.11)		(2.81)		(-0.27)	
OPTION%	0.328	***	-0.112	**	0.878	***	0.303	***	-0.091	***	0.906	***
	(4.72)		(-2.40)		(8.10)		(8.03)		(-3.67)		(14.41)	
TECH	-0.261	**	0.041		-0.443	***	-0.194	***	0.089	***	-0.380	***
	(-2.49)		(0.58)		(-2.71)		(-3.76)		(2.62)		(-4.42)	
REGULATED	-0.006		-0.024		0.051		0.022		0.005		0.071	***
	(-0.21)		(-1.20)		(1.08)		(1.62)		(0.53)		(3.11)	
INVEST	-0.211		-0.104		-0.308		-0.018		0.034		-0.188	
	(-1.23)		(-0.91)		(-1.15)		(-0.22)		(0.62)		(-1.34)	
PERSIST	0.000		0.033		0.009		-0.003		0.014		-0.021	
	(-0.01)		(1.43)		(0.16)		(-0.22)		(1.35)		(-0.77)	
POST*ΔlnEARNING	**0.024**		**0.073**	***	**0.020**		**0.046**	***	**0.023**	**	**0.053**	*
	(0.61)		**(2.74)**		**(0.33)**		**(2.65)**		**(2.04)**		**(1.86)**	
lnASSETS*ΔlnEARNING	0.005		0.015		-0.004		-0.011	**	0.011	***	-0.035	***
	(0.34)		(1.52)		(-0.16)		(-2.01)		(3.03)		(-3.80)	
BM*ΔlnEARNING	-0.011		0.010		-0.072		-0.021		-0.016		-0.010	
	(-0.25)		(0.33)		(-1.01)		(-1.05)		(-1.22)		(-0.31)	
OWN*ΔlnEARNING	0.876		2.351	***	0.507		0.425		1.853		1.158	
	(0.74)		(2.97)		(0.28)		(0.23)		(1.55)		(0.38)	
CLOSEHELD*ΔlnEARNING	0.029		-0.301	***	0.122		0.051		-0.086	***	0.123	
	(0.19)		(-2.97)		(0.51)		(1.01)		(-2.60)		(1.48)	
OPTION%*ΔlnEARNING	-0.216	**	-0.051		-0.303	*	-0.090	*	-0.085	***	-0.036	
	(-2.10)		(-0.74)		(-1.89)		(-1.81)		(-2.60)		(-0.44)	
TECH*ΔlnEARNING	0.276		-0.168		0.013		0.231	**	-0.053		0.284	
	(0.77)		(-0.70)		(0.02)		(2.23)		(-0.78)		(1.64)	
REGULATED*ΔlnEARNING	0.171	***	0.098	***	0.251	***	0.032		0.023		0.074	**
	(3.08)		(2.64)		(2.89)		(1.48)		(1.63)		(2.03)	
INVEST*ΔlnEARNING	0.108		0.300		0.055		-0.011		0.013		-0.035	
	(0.39)		(1.63)		(0.13)		(-0.09)		(0.15)		(-0.16)	
PERSIST*ΔlnEARNING	-0.002		0.001		-0.020		-0.012		0.003		-0.018	
	(-0.04)		(0.03)		(-0.24)		(-0.53)		(0.21)		(-0.47)	
n	1,522		1,522		1,522		5,408		5,408		5,408	
Adj.R^2	0.06		0.07		0.07		0.07		0.06		0.08	
F-value	4.39	***	4.79	***	4.94	***	14.44	***	13.61	***	17.48	***

T-statistics are in the parenthesis under the coefficient estimates.
Year dummies are included in the model but are not tabulated.
*, **, and *** indicate the regression coefficients are significantly different from zero at the 10%, 5%, and 1% level, respectively (two-tailed).

Variable definitions:

ΔlnTOTAL_PAY	= yearly change in natural log of total executive compensation;
ΔlnCASH_COMP	= yearly change in natural log of cash compensation, calculated as the sum of salaries and bonuses;
ΔlnEQUITY_COMP	= yearly change in natural log of equity compensation, calculated as the sum of stock options and restricted stock granted;
ΔlnEARNING	= yearly change in natural log of earnings before nonrecurring items;
POST	= a dummy variable equals to 1 if data are from 2003-2005; 0 if data are from 1993-2000;
lnASSETS	= natural log of total assets;
ΔlnIND_PERFORMANCE	= change in natural log of shareholder value of all *Compustat* companies in the same two-digit SIC code, averaged across sample years;
BM	= book-to-market ratio;
OWN	= executive ownership calculated as shares (excluding stock options) owned by executives, divided by total common shares outstanding;
CLOSEHELD	= a dummy variable equals to 1 if any shareholder owns more than 20% of the shares;
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REGULATED	= a dummy variable equals to 1 if the first two-digit of SIC code is between 4400 and 5000 or between 6000 and 6999;
INVEST	= total investments calculated as the sum of research and development expenditures, acquisitions, and net capital expenditures (capital expenditures less sale of property, plant, and equipment) made by the firm divided by average total assets;
PERSIST	= earnings persistence.